

PHONOLOGICAL PROBLEMS IN TEACHING ENGLISH
TO MANDARIN SPEAKERS WITH SPECIAL
REFERENCE TO /l r/

by 544

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CHAPTER 1

INTRODUCTION

Statement of the Problem.

1.0 "A language is a system of habit patterns associated with meaning. It may be dealt with as a code, i.e., made up of signals which may be combined in various ways to carry information."¹

1.1 The first understanding to be reached in attempting a fresh approach to basic language learning is that language is fundamentally and primarily audio-lingual, a matter of mouth and ear. "Language is made up of sounds, not letters."² Therefore understanding and speaking should be the first aim.

1.2 "In learning a new language the chief problem is the mastery of the sound system--to understand the stream of speech, to hear the distinctive sound features and to approximate their production."³ The basic elements in the expression system are the phonemes.⁴ Different languages have different sets of phonemes. The speaker of one language listening to persons speaking another language that he does not understand will hear the foreign language sound units in terms of his own sound system. A native speaker not only hears foreign speech in terms of his native phonemic pattern, but also produces foreign sounds in terms of his own phonemic system. This is what the Chinese does when he starts learning English." The basic

problems arise not out of any essential difficulty in the features of the new language themselves but primarily out of the social set created by the first language habits."⁵ It is not the student's fault if he is unable to control the English sound system. He is further handicapped by the inadequacies in the teaching materials available in Taiwan, and in the preparation of the teacher.

1.3 "The most effective materials are those that are based on a scientific description of the language to be learned, carefully compared with a parallel description of the native language of the learner,"⁶ and that provide adequate opportunity for practice of the difficult sounds through the steps:

(1) recognition, (2) imitation, (3) repetition, (4) variation, and (5) selection.⁷

1.4 The purpose of this report is to provide teachers of English with some practical guidance, on the basis of contrastive linguistic analysis, for dealing with problems which Mandarin speakers may encounter.

Review of the Literature.

1.5 The Second World War was a turning point for linguistics. Since the war, linguists have given increasing attention to many linguistic problems in English studies. In a very short time, the teaching of English as a second language developed as a new profession. There are many books concerned with the contrastive analysis approach to language teaching which are useful for reference in this report.

1.6 Studies of English Linguistics and Phonology.

Bloomfield⁸ presents an introduction to descriptive linguistics from a behavioristic viewpoint. He states that the first step in the description of a language is phonology, the study of significant speech-sounds. He defines each minimum unit of distinctive sound-features and states what combinations occur. He views vowels and consonants as primary phonemes, stress and pitch as secondary phonemes. Bronstein⁹ in his Introduction to Phonetics presents a thorough consideration of all the elements of the sound system of American English. Francis¹⁰ describes the English phonological system. Gleason¹¹ gives a general overall view of descriptive linguistics. Hill¹² shows an exposition of the analytical procedures of linguistic science in the investigation of every level of the structure of English from sounds up to complex sentences. Jones¹³ describes English pronunciation in most of its aspects, particularly from the point of view of the student of English as a second language. Lado and Fries¹⁴ describe all points of sound contrast, and present articulation diagrams. Sapir¹⁵ considers language as a culturally determined system of sound symbols. Trager and Smith¹⁶ represent in many ways the culmination of the linguistic developments since Bloomfield. They give a very thorough treatment of sound system of English including stress, pitch, and juncture. This analysis rapidly came to be more or less the standard among linguists in America. Wise¹⁷ points out the production and classification of English speech sounds.

1.7 Studies of Teaching a Second Language.

Brooks¹⁸ gives the theory and provides a practical method of teaching a second language. Engler¹⁹ has done extensive work in contrasting German and English, stressing the development of language drills for purposes of second language teaching. Finocchiaro²⁰ relates the differences between learning one's native language and learning a second language, particularly after childhood. She presents some basic principles of language learning and gives suggestions for curriculum content. Fries²¹ presents much information on the theories that lie behind the linguistic approach to the teaching and learning of English as a foreign language. The approach is mainly oral, based on a contrastive structure study between the learner's language and English. Lado²² believes that descriptive linguistics can play an important role in practical language teaching, and he points out the value of contrastive studies. Politzer²³ defines the relationship of linguistics to language teaching. Alden²⁴ lists reference materials for the teaching of foreign language.

1.8 Studies in Mandarin.

Aldrich's²⁵ discussion of tones and rhythm in spoken Chinese have made a distinct contribution to the textbook literature for the study of the Chinese language. Chao,²⁶ Cheng,²⁷ and Hartman²⁸ give important and reliable treatments of the pronunciation of Mandarin. Hockett²⁹ discusses general Peiping phonology. Karlgren³⁰ has written a general introduction to

Mandarin phonetics, while Wong³¹ analyzes the phonemes of spoken Mandarin Chinese in terms of distinctive features.

1.9 Studies in Contrastive Analysis of English and Mandarin.

There are few studies in the literature concerned with the contrastive analysis of English and Mandarin. Cochran and Lin³² list the similarities and differences of English and Mandarin phonemes. Fries and Shen³³ point out the problems of English pronunciation to Mandarin speakers but without further detailed explanations. Shen³⁴ describes how to teach the initial English /r/ to Mandarin students.

1.10 Besides the materials mentioned above, there are other studies which are helpful for this report, e. g., Sprenger's "Contrastive Analysis of Peiping and German"³⁵ and Wise's "Some Problem Sounds for Cantonese Students."³⁶

Procedures.

1.11 This report is confined to the phonological level and is based on a contrastive study with English as the target language and Mandarin as the native language.

1.12 Most teachers of English as a second language agree that teaching /l/ and /r/ remains a problem for students from the Orient. This problem for Mandarin students will be explored in Chapter 4 of this report.

1.13 The first step in the procedure is to give summaries of the English and Mandarin sound systems. The second step is to contrast the sound systems of these two languages. The third step is to point out the most troublesome problems in teaching

English to Mandarin students and suggest drills to improve mastery of the problem sounds. These drills are presented after the discussion of each problem area.

Justification.

1.14 There has not been sufficient contrastive study between English and Mandarin to assure the efficiency of teaching English to Mandarin speakers, nor has modern linguistically oriented methodology filtered down to many high school English teachers in Taiwan.

1.15 Though Mandarin students study English for ten years, in high school and college, it is still impossible for many of them to speak English without a "Mandarin accent". Most of them try to pronounce each word as it is spelled.

1.16 Hearing English for years is not enough; a detailed phonetic explanation with examples is not enough. Only by contrasting a description of the sound system of English with that of Mandarin, can the differences between them be pointed out. The results of these contrastive analyses form the basis for the preparation of tests and teaching materials to control the difficult problems, and for the successful correction of Mandarin students learning English.

1.17 It is hoped that this report will contribute to the unification of our knowledge of English/Mandarin contrastive analysis, and that it will provide a useful tool in spreading modern methodology in language teaching in Taiwan.

CHAPTER 2

CONTRASTIVE ANALYSIS OF THE CONSONANTS OF ENGLISH AND MANDARIN

2.0 Consonants are classified according to place and manner of articulation.

2.1 English Consonants.³⁷

English has twenty-four consonant phonemes: /p t k b d g θ ð
č ʃ f v s z š ž m n ŋ l r y w h/.

2.2 Mandarin Consonants.³⁸

Mandarin has twenty-one consonant phonemes: /p' t' k' p t
k c c' č c' f s š m n ŋ l r y w h/.

2.3 Contrastive Consonant Phoneme Inventory.

A survey of the gross differences between the two consonant systems at the phonemic level yields the suspicion that the Mandarin speaker will encounter difficulty with the English stop system because he is conditioned to react to aspiration as a significant feature and not to voicing, when voicing is phonemic in English but aspiration is not. Furthermore, he will encounter difficulty with English medial consonants and consonant clusters which do not occur in Mandarin. Apparently the English affricates /č ʃ/ and fricatives /v e ð z ž/ constitute new articulations and discriminations to be learned, while his Mandarin /c c' c' c'/' occasion little problem in English, since he simply will not need them unless he tends to substitute them for some English phonemes. Resolution of this

suspicion requires a look at the allophonics and phonetics involved.

2.31 Stops.

English has voiced and voiceless counterparts at each of the three positions, bilabial, alveolar, and velar, while Mandarin has aspirate and unaspirate, both voiceless, counterparts at essentially the same positions, with one exception, i. e., Mandarin /t t'/ are post-dentals. English stops occur in all positions in a word, while Mandarin stops occur only in initial position. The English voiceless stops /p t k/ are commonly aspirated in initial position, relatively unaspirated intervocalically, unaspirated after /s/, and varying freely as aspirate, unaspirate, or even unreleased, in final position. The voiced series /b d g/ seems to be relatively unaspirated under any circumstances. It would seem, then, that the Mandarin speaker could use his Mandarin aspirate /p' t' k'/ for English /p t k/ in initial position with satisfactory results, his Mandarin /p' t' k'/ for English /p t k/ intervocalically, finally, and after /s/ without actually barring communication. However, student should be taught, first of all, to pronounce /t t'/ by putting the tip of the tongue on the alveolar ridge, then to distinguish English /p' t' k'/ and /p t k/ according to their distributions. As long as he was consistent about the discrimination, he could also employ his Mandarin /p t k/ for English /b d g/ in initial position, and even in medial or final position, though it would probably sound strange to the English speaker and might even be a source of confusion in intervocalic

and final positions. Thus in producing the English stop series, the student should be taught to produce English /t d/ by putting the tip of the tongue on the alveolar ridge, then to voice English /b d g/ by vibrating the vocal cords. Drill is advocated to help the learner develop the habit of discrimination between English /p t k/ and /b d g/ on the basis of voicing. The drill should begin with aspirate /p' t' k'/ in initial position, then unaspirate /p t k/ in other positions, thence to /b d g/ in all positions by adding voice to /p t k/. The second step is to contrast /p t k/ with /b d g/ in all positions. The third step is to supply the one and ask the student to give the contrastive counterpart. Subsequently, continued pressure on the student to make the discrimination of the basis of the appropriate significant feature and to produce the appropriate allophone, is advocated as a means of developing an improved accent.

Drill One: aspirated /p'/. .

Listen:	pill	pull	pin	poor
---------	------	------	-----	------

Imitate:	pill	pull	pin	poor
----------	------	------	-----	------

Drill Two: aspirated /t'/. .

Listen:	take	time	tent	task
---------	------	------	------	------

Imitate:	take	time	tent	task
----------	------	------	------	------

Drill Three: aspirated /k'/. .

Listen:	key	kill	cat	cool
---------	-----	------	-----	------

Imitate:	key	kill	cat	cool
----------	-----	------	-----	------

Drill Four: unaspirated /p/.

Listen: spill spin spend spot

Imitate: spill spin spend spot

Drill Five: unaspirated /t/.

Listen: step stick stand steel

Imitate: step stick stand steel

Drill Six: unaspirated /k/.

Listen: school skin sky skill

Imitate: school skin sky skill

Drill Seven: English /b/ in all positions.

Listen: big mobbing bib blow

Imitate: big mobbing bib blow

Drill Eight: English /d/ in all positions.

Listen: deal louder did drop

Imitate: deal louder did drop

Drill Nine: English /g/ in all positions.

Listen: got tiger log glow

Imitate: got tiger log glow

Drill Ten: Contrasting English /p/ and /b/.

Listen: pin-bin mopping-mobbing tap-tab plot-blot

Imitate: pin-bin mopping-mobbing tap-tab plot-blot

Drill Eleven: Contrasting English /t/ and /d/.

Listen: time-dime metal-medal bite-bide twain-Duane

Imitate: time-dime metal-medal bite-bide twain-Duane

Drill Twelve: Contrasting English /k/ and /g/.

Listen: cap-gap broken-brogan lack-lag came-game

Imitate: cap-gap broken-brogan lack-lag came-game

2.32 Affricates.

2.321 English /tʃ/ is a voiceless affricate. "It is made by placing the tongue in the position for /t/, i.e., with the sides in contact with the upper molars, the tip in contact with the alveolar ridge, and the velum closed. The voiceless breath stream is forced upward as for /t/, but instead of free plosion over the tip of the tongue, there follows constricted plosion with the tongue in the position for /s/, that is, with the blade elevated nearly to the hard palate."³⁹

Cheng states "In Mandarin, palato-velar stop /tʃ'/' is assimilated by the following /i/ and /u/, becoming affricate /tʃ'/'". Thus Mandarin speakers have no problem in pronouncing English /tʃ/ in the position followed by vowel /i/ and /u/. Drill beginning with /tʃi-/ and /tʃu-/ leading to drill of /tʃ/ in all other positions will help establish the articulation of English /tʃ/.

chicken	chocolate	chisel	choke
choose	church	choosy	chest
nature	virtue	ritual	wretch
scratch	rich	chew	lunched

2.322 English /dʒ/ is an affricate, the voiced counterpart of /tʃ/. Since Mandarin has neither /tʃ/ nor /dʒ/, it is hard for Mandarin speakers to distinguish these phonemes. After /tʃ/ has been established, /dʒ/ can be taught by the addition of voice, and then drill contrasting /tʃ dʒ/ is useful in establishing the discrimination.

/č ^v -/	/j ^v -/	/-č ^v -/	/-j ^v -/	/-č ^v /	/-j ^v /
choose-Jews	etches-edges			lunch - lunge	
choke -joke	searches-surges			batch - badge	

2.33 Fricatives.

2.331 English /f s š^v/ are labiodental, alveolar, and alveopalatal, respectively, voiceless fricatives. Mandarin students should have no difficulty in the articulation of English fricatives /f s š^v/ since they are essentially the same as their Mandarin counterparts. The problem here involves their distributions. English /f s š^v/ occur in initial, medial, and final positions. The Mandarin /f s š^v/ occur only in initial prevocalic position. Thus drill beginning with /f s š^v/ in initial position, then in medial and final positions, and then in consonant clusters will be helpful in producing them in all environments.

Drill One: /f-/.

Listen: for flag follow

Imitate: for flag follow

Drill Two: /-f-/.

Listen: offer fifty soften affect

Imitate: offer fifty soften affect

Drill Three: /-f/.

Listen: enough leaf roof wolf

Imitate: enough leaf roof wolf

Drill Four: /s-/.

Listen: soap send sick stand

Imitate: soap send sick stand

Drill Five: /-s-/.
 Listen: listen lesson master sister
 Imitate: listen lesson master sister

Drill Six: /-s-/.
 Listen: pass face notes mass
 Imitate: pass face notes mass

Drill Seven: /^vs-/.
 Listen: sugar shoulder sherpherd shrew
 Imitate: sugar shoulder sherpherd shrew

Drill Eight: /-^vs-/.
 Listen: ocean crochet fashion
 Imitate: ocean crochet fashion

Drill Nine: /-^vs-/.
 Listen: fish leash gash
 Imitate: fish leash gash

2.332 English /v z ^vz/.
 Since Mandarin has voiceless fricatives /f s ^vs/, there is little trouble for Mandarin students in adding voice to produce the English /v z ^vz/. The problem here is to get students to hear and produce the difference between the English voiced /v z ^vz/ and the voiceless /f s ^vs/ in context. Drill like the following will be useful in distinguishing them.

Drill One: English /f/ and /v/.
 Listen:

fan - van	safer -saver	leaf -leave
fie - vie	surface-service	belief-believe

Repeat:

fan - vin	surface-service	leaf -leave
fie - vie	safer -saver	belief-believe

Drill Two: English /s/ and /z/.

Listen:

sue -	zoo	curse	-curs
seal -	zeal	hiss	-his

Repeat:

sue -	zoo	curve	-curs
seal -	zeal	hiss	-his

Drill Three: English /s^v/ and /z^v/.

Listen:

delusion -	dilution
glazier -	glacier

Repeat:

delusion -	dilution
glazier -	glacier

2.333 English /θ/ is an interdental voiceless fricative, which has no counterpart in Mandarin. Since Mandarin post-dental aspirate /t'/ and alveolar fricative /s/ are most close to English /θ/, if student reacts to the manner of the articulation as a significant feature, he may substitute /s/ for /θ/, if he reacts to the place of the articulation as a significant feature, he may substitute /t/ for /θ/. Thus the student should be taught to realize this phoneme by placing the tip of the tongue lightly against the tips of the upper front teeth and blowing the breath voicelessly out between the teeth and tongue. Then the drills contrasting English /t/ and /θ/, /s/ and /θ/ should be given.

/θ/	/s/	/θ/	/t/
thin - sin		thin - tin	
Leith-lease		tenth- tent	
thank-sank		thigh- tie	

2.334 English /ð/ is made in the same place and in the same manner as /θ/, but is pronounced with vibration of the vocal cords. Since Mandarin has neither /θ/ nor /ð/, it is difficult for Mandarin speakers to distinguish these two phonemes. After /θ/ has been established, /ð/ can be taught by the addition of voice, and a drill contrasting /ð/ and /θ/ will be helpful in distinguishing them.

/ð-/	/θ-/	/-ð-/	/-θ-/
thy	thigh	either-ether	
		/-ð/	/-θ/
		loaths-loath	

2.34 Lateral and Retroflex.

In learning to speak a foreign language, allophonic differences cause the greatest difficulty. Language may have similar phonemes, but there can be different allophones and different arrangements of phonemes, so that even the similar phonemes pose teaching problems.⁴⁰ In Mandarin, the phoneme /l/ occurs only in the initial position and /r/ in the initial and final positions. Thus Mandarin students have trouble with English /l/ and /r/ when they occur elsewhere. Since these two phonemes give particular trouble, they will be discussed in more detail in Chapter 4.

2.35 Nasals.

Since Mandarin has counterparts for the English nasals /m n ŋ/, Mandarin students have no difficulty in the articulation of English /m n ŋ/ in isolation. The problem here is due to the distribution of these phonemes. In English, /m n/ occur in all positions, /ŋ/ occurs medially and finally, but never initially. Since Mandarin has no medial consonants at all, Mandarin /m n ŋ/ do not occur medially. Mandarin /m/ occurs only initially, /n/ initially and finally, /ŋ/ only finally. A drill as following will help to control English /m n ŋ/ in medial position, /m/ in final position, and all three in consonant clusters.

Drill One: /-m-/.

Listen:

summer	campus	comfort	smack
small	rimmed	rhymed	formed

Imitate:

summer	campus	comfort	smack
small	rimmed	rhymed	formed

Drill Two: /-m-/.

Listen:

come	time	hum	ram
dumb	trim	rhythm	whim

Imitate:

come	time	hum	ram
dumb	trim	rhythm	whim

Drill Three: /-n-/.

Listen:

guns	dinner	scenes	pond
wins	penny	bench	cunning

Imitate:

guns	dinner	scenes	pond
wins	penny	bench	cunning

Drill Four: /-h-/.

Listen:

bank	thank	longed	singer
length	hanged	single	strength

Imitate:

bank	thank	longed	singer
length	hanged	single	strength

2.36 Consonant Clusters.

A group of two or more consonants which adjoin each other is called a consonant cluster. There are initial, medial, and final consonant clusters in English, but none in Mandarin. Each language has its own characteristic consonant and vowel arrangements: CV, VC, CVC, CCV, etc.⁴¹ In English, the following arrangements are possible: V, CV, CVC, VC, VCC, VCCC, CCV, CCVC, CCVCCC, CCVCCCC, CCCVC, CCCVCCC, CCCVCCCC. In Mandarin, only the following are possible:⁴²

V	/u/	'five'	CVC	/ten/	'lamp'
VV	/uo/	'I'	CVV	/mau/	'cat'
CV	/t'sa/	'he, she'	CVVV	/k'uai/	'quick'
VVV	/iau/	'waist'	CVVC	/tien sin/	'snack'
VVC	/ia ^h /	'a surname'			

Thus Mandarin has no consonant clusters in initial, medial, or final position. Mandarin students tend to add a vowel after

the first consonant in the cluster, e. g., /pəreɪd/ 'parade' for /preɪd/ 'prayed'.

In English initial consonant clusters, the maximum number of phonemes is three. These clusters of three have the following positional characteristics:⁴³

- a. Only /s/ can occupy first position.
- b. Only the voiceless stops /p t k/ appear in second position.
- c. Only /l r y w/ appear in third position.

2.361 The following is a list of some important English consonant clusters which give much trouble to Mandarin students.⁴⁴ Students should practice pronouncing items like these, being especially careful to avoid the insertion of an epenthetic vowel in the consonant cluster.

a. Initial English Consonant Clusters of Two Phonemes:

/bɪ-/	blow	/br-/	brine	/bɹ-/	beauty
/dr-/	droop	/dw-/	dwell	/dɹ-/	due
/fl-/	flood	/fr-/	fruit	/fɹ-/	fuse
/gl-/	glow	/gw-/	Gwen	/gr-/	grow
/gɹ-/	gules	/hy-/	huge	/kl-/	cling
/kr-/	crew	/kw-/	quick	/ky-/	cure
/my-/	mute	/ny-/	Newt	/pl-/	please
/pr-/	prove	/pw-/	Pueblo	/py-/	pure
/sf-/	sphere	/sl-/	slide	/sm-/	smear
/sn-/	snap	/sp-/	speed	/st-/	stool
/sθ-/	sthenic	/sv-/	svelte	/sw-/	swing

/sy-/	suit	/sl-/	Schlitz	/sm-/	shmoo
/sn-/	Schneider	/sr-/	shrew	/sw-/	Schwartz
/tr-/	trail	/tw-/	twist	/ty-/	tune
/cy-/	chew	/θr-/	through	/θw-/	thwack
/θy-/	thews	/vy-/	view	/zy-/	presume

b. Initial Clusters of Three Phonemes:

/skl-/	schlerotic	/skw-/	squid
/skr-/	screw	/sky-/	skew

c. Final Clusters of Two Phonemes:

/-bd/	grabbed	/-bz/	bobs	/-dz/	sheds
/-fs/	laughs	/-ft/	cuffed	/-gd/	dragged
/-gz/	drags	/-jd/	hedged	/-ks/	decks
/-kt/	decked	/-ld/	held	/-lk/	silk
/-lm/	helm	/-lp/	help	/-lt/	tilt
/-lz/	calls	/-md/	dimmed	/-mz/	ccmes
/-nd/	send	/-nt/	bent	/-nz/	fins
/-ŋk/	ink	/-nθ/	month	/-ɣd/	thronged
/-ŋz/	throngs	/-pt/	slipped	/-ps/	steps
/-rd/	ford				

d. Final Clusters of Three Phonemes:

/-ŋks/	blanks	/-ldz/	fields
/-lks/	milks	/-lvz/	valves
/-nɔ̃t/	lunched	/-rɣd/	surged

2.37 Semi-vowels.

"From an articulatory viewpoint, /w y h/ are similar to fricatives, but from a distribution viewpoint, it is more

convenient to class them separately. In pre-vocalic position in the same syllable with following vowel, they function like consonants; but in post-vocalic position in the same syllable with preceding vowel, they function as vocalic off-glides."⁴⁵ There are counterparts for these semi-vowels in Mandarin. In Chapter 3, under the analysis of vowels, semi-vowels will be discussed in more detail.

CHAPTER 3

CONTRASTIVE ANALYSIS OF THE VOWELS OF ENGLISH AND MANDARIN

3.0 Vowels are classified according to the position of the highest part of the tongue during articulation.

3.1 English Vowels.⁴⁶

There are nine vowel phonemes in English: high-front /i/, mid-front /e/, low-front /æ/, high-central /ɪ/, mid-central /ə/, low-central /a/, high-back /u/, mid-back /o/, low-back /ɔ/. The front vowels are made with lips spread, the back vowels with lips rounded, and the central vowels take neutral position, and the lip action with front and back vowels is progressively less from high to low. "These nine vowel phonemes combine with the semi-vowels /w y h/ in dialect and idiolect variation to form the gliding vowel nuclei so-characteristic of English, and the traditional diphthongs /ay oy aw/. With reduction of stress all may undergo modification in quality in the direction of central so that in unstressed syllables they frequently are morphonemically replaced by /ɪ/ or /ə/."⁴⁷

Each of nine vowels can occur alone, with /y/, with /w/, or with /h/. This makes a total of thirty-six possible vocalic syllable nuclei. Apparently no dialect or idiolect has all of them, though some may approach it. Every one of the thirty-six, however, occurs in some dialect. Out of the thirty-six, each speaker, according to his dialect, socioeconomic level,

and individual characteristics, chooses some fourteen or fifteen of them as the system that he ordinarily uses.

3.2 Mandarin Vowels.⁴⁸

There are seven vowel phonemes in Mandarin: high-front rounded /ü/, high-front unrounded /i/, high-central /ɨ/, high-back rounded /u/, mid-front unrounded /e/, mid-back rounded /o/, and low-front unrounded /a/. The seven vowel phonemes of Mandarin combine with the semi-vowels /w h y/ to form gliding vowel nuclei and two diphthongs /ay aw/. Each of these seven vowels can occur alone, and some of them combine with the semi-vowels /w y h/ to make twenty possible nuclei. Because of idiolect variation, not every speaker has all of these complex nuclei, but each does have some of them in the system that he ordinarily uses.

3.3 Contrasts of English and Mandarin Vowel System.

It is convenient to illustrate the contrasts between Mandarin and English vowels in a simplified scheme, showing the vowel system of one speaker of English and that of one speaker of Mandarin.

English:⁴⁹

/iy/	'beat'	/ɨ/	'pretty'	/uw/	'boot'
/i/	'bit'	/ɔ/	'but'	/u/	'put'
/ey/	'bait'			/ow/	'boat'
/e/	'bet'			/ɔh/	'bought'
/æ/	'bat'	/a/	'bot'		

Mandarin:

/üy/	<u>ü</u> y	'fish'			
/iy/	<u>i</u> y	'one'	/i/	<u>s</u> i	'four'
				/uw/	<u>c</u> uw
/i/	<u>n</u> i	'you'		/u/	<u>f</u> u
					'father'
/ey/	<u>m</u> ey	'sister'		/ow/	<u>k</u> ow
					'mouth'
			/ah/	<u>p</u> 'ah	'fear'
			/a/	<u>f</u> an	'rice'

In general, the main problems for Mandarin students in controlling English vowel phonemes are in producing vowel /æ/ which is an allophone of /a/ in Mandarin, and vowels /ɔ:/ which are allophones of vowel /ə/ in Mandarin.

3.31 Vowel /æ/:

English /æ/ is a low-front vowel. In Mandarin, low-central /a/ has an allophone [æ] which occurs before /i/. Apparently, the student has no problem in producing English /æ/ in isolation. The predictable difficulty with English /æ/ is in any position which is not followed by /i/. Drill begins with /æi-/ leading to other position and then to contrast with /a/ will be helpful in pronouncing English /æ/.

/æ/	/a/
bay	bot
pat	pot
hat	hot
sat	sot

3.32 Vowel /ə/:

English /ə/ is the lax central vowel that occurs stressed

in initial and medial position in such words as up, cut, dozen, mother. It is also an exceedingly common vowel in unstressed position in all dialects of American English.⁵⁰ "It is probably best described as a sound made with the articulation in neutral position, with neither spread nor rounded lips, and with the tongue neither forward nor back . . ."⁵¹

In Mandarin /ə/ is an allophone of the phoneme /e/. "It occurs in unstressed syllables as the syllabic element before a consonant and as the non-syllabic element in a vowel cluster."⁵² Since Mandarin students do use this sound, it should not present new difficulty for them in producing it in isolation; in the stream of speech, however, they frequently substitute /e/ for /ə/ in English, in stressed syllables, e. g., /bet/ for /bət/. Drill beginning with /ə/ unstressed in all positions leading to drill with /ə/ stressed in initial and medial positions, and thence to drill contrasting /ə/ with /e/ is helpful.

about comical sofa .

up above

but

3.33 Vowel /ɔ/.

"English vowel /ɔ/ is formed with the tongue low. The tongue is bunched in the back part of the mouth, the lips are usually slightly rounded, and the muscles of both tongue and lips are slightly tense."⁵³ "In Mandarin /ɔ/ is an allophone of the phoneme /e/ which occurs after vowel /u/ in final position."⁵⁴ In producing this Mandarin allophone, however, the mouth is still less open than for English /ɔ/. The tongue is

held in higher position than for English /ɔ/. Thus the student usually confuses English /ɔ/ with /o/. He must learn that in pronouncing English /ɔ/ the lips are protruded and rounded less than /o/, and the mouth is more open. He must learn to hold the tongue as low down and as far back as possible for English /ɔ/. A drill contrasting English /ɔ/ and /o/ will be helpful in distinguishing /ɔ/ and /o/.

awe	oh
ought	oat
ball	bowl
law	low

CHAPTER 4

THE PROBLEM OF /l/ AND /r/

4.0 Teaching the phonemes /l/ and /r/ to Orientals remains a problem for teachers of English as a second language, but the problem varies with the native language background of the student. The Mandarin student does not confuse every /l/ and /r/ in English, nor does he confuse the same ones as the Japanese or the Thai. The English teacher will not despair of teaching these phonemes to Mandarin students if care is taken to analyze the cause of the problem and to write drills aimed at overcoming the problem. In this chapter an analysis of these specific points for speakers of Mandarin is undertaken.

4.1 Articulation and Distribution of English Lateral /l/.

"The English /l/ is typically produced with the tip of the tongue touching the alveolar ridge, the mid-part curving downward, and the back raised. The resulting schwa-colored /l/ causes any English vowel before /l/ to have an off-glide in the direction of mid-central."⁵⁵ In most dialects of American English, there are following recognizable /l/ allophones: the voiced and voiceless apico-alveolar lateral, the voiced apico-alveolar lateral with dorso-velar coarticulation. Francis describes the distribution of /l/ allophones as follows:⁵⁶

- a. The voiced apico-alveolar lateral, [l], the so-called "clear l". It occurs in initial position and between a voiced consonant and following vowel as in link /lɪŋk/, and glance /glɑːns/.

- b. The voiceless apico-alveolar lateral, $[\text{ɭ}]/$, occurs often with voiceless consonants, as in flip $/\text{fl}\text{ɪ}\text{p}/$. The sound is never heard initially.
- c. The voiced apico-alveolar with dorso-velar co-articulation, $[\text{ɭ}]/$, is the usual variety of so-called 'dark l', found after vowels and as a syllabic nucleus in English. Examples of the usual position of this sound are gulf $/\text{g}\text{ʌ}\text{ɪ}\text{f}/$ and bottle $/\text{b}\text{ɒ}\text{t}\text{ɪ}\text{l}/$.

4.2 Articulation and Distribution of English Retroflex $/\text{r}/$.

The English $/\text{r}/$ is realized in varied way in different dialect areas and by different individual speakers. It is usually accompanied by slight protrusion of the lips, and it is generally frictionless. "Before vowels, $/\text{r}/$ is a vowel-like glide. In post-vocalic position we substitute either a vowel for the $/\text{r}/$, or delete it entirely."⁵⁷

"English $/\text{r}/$ is made by pointing the tongue-tip toward the roof of the mouth at about the point where the palatal arch joins gum ridge, and passing the vocalized breath through the aperture between the tongue and the hard palate. The velum is closed."⁵⁸ According to Francis, there are five allophones of English $/\text{r}/$. He describes their distributions as follows:⁵⁹

Voiced apico-alveolar retroflex semi-vowel $/\text{r}/$. It occurs commonly in initial position and between an initial $/\text{b}/$ or $/\text{g}/$ and following vowel, as in red, brown, green. Between $/\text{p f θ s k}/$ and a following vowel, $/\text{r}/$ may be in free variation with its voiceless counterpart, $[\text{ɾ}]/$. After $/\text{t}/$, many speakers use a voiceless alveolar retroflex fricative $[\text{ɻ}]/$, and after $/\text{d}/$ its voiced counterpart $[\text{ɽ}]/$. Ex: trick and drunk. Nonsyllabic $[\text{ɻ}]/$, which occurs as the off-glide of some of the centering diphthongs, is phonetically similar to the other allophones of $/\text{r}/$ and in complementary distribution with them. That is, $[\text{r r} \text{ɻ} \text{ɽ} \text{ɽ}]/$ always occur before vowels, and $[\text{ɾ}]/$ always occurs after them.

4.3 Articulation and Distribution of Mandarin Lateral /l/.

"Mandarin /l/ is articulated by putting the tip of the tongue against the alveolar, slightly opening the mouth, vibrating the vocal cords, and letting breath pass around the sides of the tongue."⁶⁰

The Mandarin /l/ may be defined as a voiced apico-alveolar lateral. Hartman, Cheng, and Sprenger consider that there is only one allophone in Mandarin /l/. Sprenger describes it as follows:⁶¹

The Peiping /l/ may be defined as a voiced apico-alveolar lateral. It has but one realization, the clear /l/, occurring in syllable-initial position only. Ex: /lu/ 'road'.

4.4 Articulation and Distribution of Mandarin Retroflex /r/.

Mandarin /r/ is made by pointing the tip of the tongue curled back against the roof of the mouth, forcing the air out and vibrating the vocal cords. It is initially a voiced retroflex palatal fricative. "Mandarin initial /r/ is pronounced with no lip rounding unless followed by a rounded vowel."⁶²

"In post-nuclear arrangements /r/ is a frictionless glide from the preceding vowel to the retroflex position. When the preceding vowel is of the mid-vowel range, /r/ is realized as a concomitant retroflex feature of the vowel phone; in other words, /r/ in this position merely indicates that the tongue should be curled back when pronouncing the vowel. Ex: /er/ 'two'. When it is preceded by any allophone of high or low vowels, /r/ becomes occasionally a non-nuclear combination following the nucleus. Ex: /nuər/ 'daughter'."⁶³

4.41 There are four allophones of Mandarin /r/. Their distributions may be described as follows:

/r̥/ occurs initially before rounded vowels.

/r̥/ occurs initially before unrounded vowels.

/r/ occurs finally after mid vowels.

/R/ occurs finally after high and low vowels.

4.5 Contrast of Consonants /l/ and /r/ of English and Mandarin.

Both English and Mandarin have lateral /l/. Apparently there is no problem for the Mandarin student in producing English /l/ in isolation. The problem here is caused by the distributions. English lateral /l/ occurs in initial, intervocalic, final positions and in consonant clusters, while Mandarin lateral /l/ occurs only in initial pre-vocalic position.

4.51 Both English and Mandarin have phoneme /r/. English /r/ occurs in initial, intervocalic, post-vocalic positions and in constant clusters. Mandarin /r/ occurs in initial pre-vocalic and final post-vocalic positions. Mandarin initial pre-vocalic /r/ has more friction than English /r/. Mandarin initial /r/ is pronounced with lips unrounded unless followed by a rounded vowel. However, Mandarin final post-vocalic /r/ is much like English post-vocalic /r/ since both function as a non-syllabic off glide. Thus a Mandarin student could use his Mandarin final /r/ for English final /r/ with satisfactory results.

4.52 From the above contrastive analysis of /l/ and /r/ phonemes of English and Mandarin, some trouble spots which most Mandarin speakers may come across when they speak or read English may be predicted.

a. /r/ in initial position followed by an unrounded vowel. The problem here is not that the students cannot produce the /r-/ with rounded lips but rather that the /r-/ with lip rounding occurs in a different environment.

b. /r/ and /l/ in medial position. It is hard for Mandarin speakers to pronounce /r/ and /l/ in the medial position since there is no medial consonant in Mandarin. They usually tend to omit either.

c. /l/ in the final position. Mandarin has no final lateral /l/; thus students tend to omit final /l/.

d. /l/ and /r/ with consonant clusters in all positions. Since Mandarin has no consonant clusters, students tend to add a vowel after the first consonant in the cluster, e. g., /pəreyd/ 'parade' for /preyd/ 'prayed'.

4.6 The Phonology Drills.

The following phonology drills are designed to deal systematically with problems in pronunciation that Mandarin students have with English /l/ and /r/.

Drill One: Drill of English /r-/ followed by rounded vowels.

Listen:	room	rook	rue
	Ruth	rude	root
	roof	roost	rube
	ruse	route	ruby
	road	rose	rope
	rout	rote	roe
	roam	Roman	

Imitate:	room	rook	rue
	Ruth	rude	root
	roof	roost	rube
	ruse	route	ruby
	road	rose	rope
	rout	rote	roe
	roam	Roman	

Drill Two: Progressing from /r-/ before rounded vowels to /r-/ before unrounded vowels.

Listen:	rue	read
	rue	rid
	rue	rate
	rue	red
	rue	rat
	rue	rug
	rue	right
	rue	rain
	rue	reap

Imitate:	rue	read
	rue	rid
	rue	rate
	rue	red
	rue	rat
	rue	rug
	rue	right
	rue	rain
	rue	reap

Drill Three: Drills of English /r-/ followed by unrounded vowels.

Listen:	rise	right	run
	rush	rough	rub
	rug	rhy	rack
	rap	rat	rear
	red	rape	rain
	rate	rip	rich
	ring	rid	reach
	ream	read	

Imitate:	rise	right	run
	rush	rough	rub
	rug	rhy	rack
	rap	rat	rear
	red	rape	rain
	rate	rip	reach
	ream	read	reap

Drill Four: Repetition drill of English /r-/ followed by either a rounded or an unrounded vowel sound.

Listen: This is a room.

This is a root.

This is a reason.

This is a rose.

This is a ration.

This is a robe.

This is a rat.

Repeat: This is a room.

This is a root.

This is a reason.

This is a rose.

This is a ration.

This is a robe.

This is a rat.

This is a rib.

This is a rod.

This is a ring.

This is a rifle.

Drill Five: Drill with medial /r/ (post-vocalic and inter-vocalic).

Listen:	barn	arm	cars	heart
	born	farm	stars	large
	part	form	mark	dark
	church	earth	dirt	verb
	borrow	sorry	hurry	foreign
	person	pardon	certain	moral
	circle			

Repeat:	barn	arm	cars	heart
	born	farm	stars	large
	part	form	mark	dark
	church	earth	dirt	verb
	borrow	sorry	hurry	foreign
	person	pardon	certain	moral
	circle	purple	purse	earn
	curse	learn	charge	search
	burn			

Drill Six: Drill with medial /l/ (intervocalic).

Listen: sailing mailing
feeling selling
telling filling
calling pulling
rolling

Repeat: sailing mailing
feeling selling
telling filling
calling pulling
rolling falling
killing failing
railing piling
spelling

Drill Seven: Drill presenting post-vocalic /l/.

Listen:	Paul	spill	till
	hell	pal	cool
	pail	hole	seal
	gall	dale	fall
	real		

Repeat:	Paul	spill	till
	hell	pal	cool
	pail	hole	seal
	gall	dale	fall
	real	feel	fill
	kill	all	ball
	tall	gull	meal
	peel	bowl	coal
	hole	roll	

Drill Eight: Drill presenting /r/ in consonant clusters.

Listen:	breeze	dream	drink
	drank	dress	drown
	draw	dry	drive
	fresh	grass	crazy
	thread	shred	spread

Repeat:	breeze	dream	drink
	drank	dress	drown
	draw	dry	drive
	fresh	grass	crazy
	thread	sared	spread
	screech	prey	trash
	tree	true	truth
	trip	train	tray
	trick	tried	truck

Drill Nine: Drill presenting /l/ in consonant clusters.

Listen:	clean	climb	class
	bleed	blind	blood
	blush	blue	flame
	floor	flew	flee
	flesh	gleam	glue
	glade	cling	please
	slam	splash	

Repeat:	clean	climb	class
	bleed	blind	blood
	blush	blue	flame
	floor	flew	flee
	flesh	gleam	glue
	glade	cling	please
	slam	splash	plum
	plain	plan	plow
	plight	plans	fly
	flat	glaze	globe
	glove	class	helm
	help	silk	fields
	held		

Drill Ten: Drill with minimal pairs which contrast /l/ and /r/ in consonant clusters.

Listen: gloom - groom

black - Brack

play - pray

clue - crew

blow - brow

blue - brew

flee - free

Repeat: gloom - groom

black - Brack

play - pray

clue - crew

blow - brow

blue - brew

flee - free

click - crick

flight - fright

flute - fruit

glow - grow

glass - grass

Drill Eleven: Repetition drill with English /r/.

Listen: Rita's wrong.

Rita's a reader.

Rita's a poor worker.

Rita's a frank lady.

Rita's a trouble maker.

Rita's a poor girl.

Repeat: Rita's wrong.

Rita's a reader.

Rita's a poor worker.

Rita's a frank lady.

Rita's a trouble maker.

Rita's a poor girl.

Rita's a rich actress.

Rita's a criminal.

Drill Twelve: Repetition drill with English /l/.

Listen: Nell likes a little water.

Nell likes a blue suit.

Nell likes a seal.

Nell likes a lark.

Nell likes an old gentleman.

Repeat: Nell likes a little water.

Nell likes a blue suit.

Nell likes a seal.

Nell likes a lark.

Nell likes an old gentleman.

Nell likes a journal.

Nell likes to solve problems.

FOOTNOTES

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PHONOLOGICAL PROBLEMS IN TEACHING ENGLISH
TO MANDARIN SPEAKERS WITH SPECIAL
REFERENCE TO /l r/

by

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AN ABSTRACT OF A MASTER'S REPORT

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ABSTRACT

Purpose: The purpose of this report is to provide an effective guidance in approaching the main problems of teaching English pronunciation to Mandarin speakers, by means of a contrastive analysis of the phonological systems of the two languages. Two particular problems, /l/ and /r/, were selected for special discussion because of the special difficulty they entail for speakers of Mandarin and the fact that they have been the subject of little study.

Procedure: The method of this report is based on a contrastive analysis of the sound systems of English and Mandarin. First, the summaries of the English and Mandarin phonological systems are presented. Second, the contrasts between the two sound systems are noted. Third, the troublesome points in teaching English to Mandarin speakers are pointed out. Finally, drills, based on the contrasts noted and interferences predicted, are suggested to improve mastery of the problem sounds.

Summary of Findings: In the contrastive consonant phoneme inventory, it was found that the Mandarin speaker will encounter difficulty with the English stop system because he is conditioned to react to aspiration as a significant feature and not to voicing, when voicing is phonemic in English but aspiration is not. Furthermore, he will encounter difficulty with medial consonants and consonant clusters which do not occur in Mandarin. The English affricates /^vc ^vj/, fricatives /v θ ð z ^vz/

constitute new articulations and discriminations to be learned, while Mandarin /c c' ç ç'/ occasion little problem in English, since he simply will not need them. In the case of vowel system, English low front /æ/, mid-central /ə/, and low back /ɔ/ are separate phonemes, while in Mandarin /æ/ is an allophone of low central /a/, /ə/ and /ɔ/ are allophones of mid-front /e/. Due to this fact, the Mandarin speaker fails to produce /æ ə ɔ/ in context, but not in isolation. Regarding phonemes /l/ and /r/, it was found that Mandarin has different distributions of these phonemes from those of English. Both English and Mandarin have phonemes /l/ and /r/. English /l/ and /r/ occur in initial, intervocalic, final positions and in consonant clusters, while Mandarin /l/ occurs only in initial pre-vocalic position, and /r/ occurs in initial pre-vocalic and final post-vocalic positions. Mandarin initial /r/ is pronounced with lips unrounded unless followed by a rounded vowel. Due to these facts, Mandarin speaker has the following problems in pronouncing English /l/ and /r/: /r/ in the initial position followed by an unrounded vowel, /r/ and /l/ in medial position, /l/ in the final position, /l/ and /r/ with consonant clusters in a word. Drills are suggested to meet these problems systematically.